PROPOSAL FOR CEBAF HALL A, JUNE 1993

Study of p-n correlations in ^{3}He and ^{4}He with the (e,e'd) reaction

The HALL A collaboration

Spokesperson: H. P. Blok (VU/NIKHEF, Amsterdam)

Abstract: The (e,e'd) reaction is an attractive way to investigate proton-neutron correlations in nuclei. We propose to study this reaction on ^{3}He and ^{4}He at high values of the three-momentum transfer q, where some problems in the interpretation of the reaction encountered at low q-values are expected to be reduced. The description of the (e,e'd) process in terms of direct deuteron knockout will be checked with the ^{3}He(e,e'd) reaction, for which exact three-body calculations are performed. The ^{4}He target offers the possibility to study both S=1, T=0 and S=0, T=1 correlations in a dense nuclear system. For both nuclei a separation of in-plane structure functions will be performed in order to enhance the sensitivity to different aspects of the reaction. The experiment will be performed in hall A with the two-spectrometer setup. A high luminosity cryogenic He target will be used.

April 5, 1993